DOCUMENT RESUME

ED 272 159 IR 012 212

AUTHOR	Curry, Blair; And Others
TITLE	State Leadership Assistance for Technology in Education (Project SLATE). Final Report. Volume I and Volume II.
INSTITUTION	Education Turnkey Systems, Inc., Falls Church, Va.
SPONS AGENCY	Department of Education, Washington, DC.
PUB DATE	Sep 84
CONTRACT	300-82-0179
NOTE	67p.
PUB TYPE	Guides - Non-Classroom Use (055) -- Reports - Evaluative/Feasibility (142)
EDRS PRICE	MF01/PC03 Plus Postage.
DESCRIPTORS	Computer Literacy; *Educational Planning; *Educational Technology; Elementary Secondary Education; *Information Technology; Microcomputers; *Policy Formation; Program Evaluation; Public Education; State Agencies; State Boards of Education; *Statewide Planning; Technological Advancement; Telecommunications
IDENTIFIERS	Project SLATE; Software Evaluation

ABSTRACT

Project SLATE (State Leadership Assistance for Technology in Education) was designed to assist state-level policy makers plan effective uses of emerging electronic learning technology in education within their respective states. In addition to providing custom-designed workshops in 20 states focusing upon state-level priority issues and needs for state policy makers, the project team also provided follow-up assistance and information services throughout the 2-year project. The purpose of this two-volume final report is to identify priority policy issues that have surfaced or are beginning to surface and to discuss alternative federal policy options to assist states in planning over the next few years. The first of two volumes describes the project and discusses general state-level policy trends and the impact of SLATE upon state policy formulation related to the use of technology. The second volume addresses the major policy issues that were identified during the SLATE project, initiatives undertaken by the states, and alternative federal policy options, which if implemented, would appear to facilitate effective planning and use of technology at the state level. Appendices include lists of project advisory group membership, participating states and state coordinators, and 14 letters of appreciation. (JB)

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STATE LEADERSHIP ASSISTANCE FOR TECHNOLOGY IN EDUCATION

(PROJECT SLATE)

FINAL REPORT

VOLUME I

PREPARED FOR: U. S. DEPARTMENT OF EDUCATION

CONTRACT NO: 300-82-0179

THE CONCLUSIONS AND RECOMMENDATIONS IN THIS REPORT ARE THOSE OF THE CONTRACTOR AND DO NOT NECESSARILY REFLECT THE VIEWS OF THE U. S. DEPARTMENT OF EDUCATION OR ANY OTHER AGENCY OF THE GOVERNMENT.

SEPTEMBER 1984

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IR012212

Acknowledgements

The State Leadership Assistance for Technology in Education (SLATE) project, conducted between October 1982 and September 1984, assisted over 600 state-level policy makers from 20 states in planning the effective and appropriate use of electronic learning technology. Services provided to policy makers through SLATE included: (a) two-day, custom-designed workshops to facilitate policy formulation and planning; (b) information services on SEA exemplary practices and implementation strategies related to technology use; and (c) follow-up technical assistance and information services to each of the participating states. The project was conducted by Education TURNKEY Systems, Inc., which was awarded the competitive contract from the U.S. Department of Education/Office of Educational Research and Improvement/Center for Libraries and Education Improvement (Educational Technology Branch), with assistance from Dr. William Wilken, Dr. Alan Hofmeister, and The Futures Group, Inc.

The Final Report on SLATE consists of two parts: (a) Volume I, which describes SLATE activities, state-level policy trends, and the impact of SLATE upon policy making; and (b) Volume II, which addresses priority state-level issues and Federal policy options to facilitate effective planning and implementation.

The success of Project SLATE, as reported in Volume I, can be attributed to a number of individuals and groups who contributed significantly to various aspects of the project. The Project Advisory Group, which consisted of high-level officials from firms which develop or market software and state-level policy makers, assisted enormously during the design phase of the project and by disseminating information about SLATE. The Project Advisory Group membership is listed in Appendix A. The SLATE State Coordinators, who assisted in the planning and conduct of SLATE workshops, were very cooperative and extremely useful throughout the project. The names of the participating states and the SLATE State Coordinators from each state are listed in Appendix B. The success of SLATE workshops can be attributed, to a large extent, to the active participation of the 600 state-level policy makers including governors, legislators, SEA officials, state board members, and representatives of education groups. In approximately two-thirds of the SLATE states, actual demonstrations of hardware and software applications were presented to participants, with opportunities for hands-on experience. These opportunities were greatly facilitated through the cooperation of hardware manufacturers, dealers, electronic learning publishers, and software developers who loaned equipment and software to the project for specific demonstrations which were requested by states.

Without a team effort, SLATE could not have achieved its objectives. Dr. William Wilken served as "State Liaison" and presented during most of the SLATE workshop sessions. Mr. Alfred Morin briefed SLATE participants on technology advances offering potential in education and on the implications of technology for schools. Mr. Morin also was responsible for technology demonstrations. Ms. Sharon Goodwin was responsible for workshop logistics, information dissemination, and operated the SLATE bulletin board/electronic mail system on SpecialNet, which provided reduced rates for participating SLATE states throughout the project. Mr. Blair Curry was responsible for preparing several research papers and final reports. The Futures Group, Inc. assisted initially in operating the CONSENSOR system used to refine policy issues during workshops and then prepared a document on telecommunication advances, which was distributed to the states. Throughout the project we received excellent cooperation and support from Ms. Evelyn White, Project Officer, and Dr. Frank Withrow, Director of the Education Technology Branch.

We acknowledge the contributions of the members of the SLATE team, the SLATE State Coordinators and participants, and other groups and individuals involved; to each we express our sincere appreciation for their assistance and cooperation.

Charles L. Blaschke
President
Education TURNKEY Systems, Inc.

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I. INTRODUCTION

The State Leadership Assistance for Technology in Education project (SLATE) was conducted in 20 states by Education TURNKEY Systems, Inc. (TURNKEY). Initiated in October 1982, SLATE was designed to assist state-level policy makers in planning for appropriate and effective use of emerging electronic technology in educational institutions. Funding was provided through a competitive contract awarded by the Office of Educational Research and Improvement/Center for Libraries and Education Improvement (Educational Technology Branch) of the U. S. Department of Education. SLATE was a logical extension of previous work. SLATE began as Project BEST (Basic Education Skills through Technology) was being completed by the Association for Educational Communications Technology (AECT). The purpose of BEST was to encourage the exchange of information among states about the potential use of technology in improving basic skills instruction.

SLATE's audience included over 600 state education policy makers: governors, state legislators, and key officials of state education agencies, state boards of education, and representatives of state education associations. Project objectives, which varied in emphasis from state to state depending upon specific state needs, included:

- identifying and prioritizing issues and problems for which technology offered feasible and appropriate solutions;
- assessing alternative strategies for the use of technology in meeting state objectives and issues;
- assisting states in developing and implementing plans; and
- providing information to state policy makers on exemplary practices, models, and technology use occurring in other states.

SLATE assisted each state through a combination of custom-designed workshops, technical assistance, and information services. In most cases, workshops covered two contiguous days; in some states the project conducted two, one-day workshops. In addition to the workshops, follow-up technical

assistance was provided; an electronic mail/bulletin board on SpecialNet was also used for information dissemination and exchange of ideas among states.

States participating in SLATE were required to meet several conditions. First, the state education agency (SEA) had to make a formal request for assistance. Second, the SEA had to agree to form a SLATE planning committee including state legislators and other key state education policy makers. Third, the state had to assume responsibility for some project logistics, especially in making workshop arrangements.

The SLATE project team designed the content and format of each state workshop, conducted major portions of the workshop, provided technology demonstrations, and facilitated a concensus building process among decision makers. In most states an electronic voter response system was used to facilitate census building.

The specific types of follow-up technical assistance and information requests varied considerably as expected. The following are illustrative:

- review and comment upon draft plans, legislative proposals, and policy related documents;
- review and synthesis of current research findings on specific topics such as the effectiveness of computer-assisted instruction; and
- compilation, research, and synthesis on potential use of specific emerging technologies such as telecommunications systems and local education utilities.

In addition to specific requests, information on exemplary practices, research findings, and other areas of common interest to most of the states were regularly disseminated in hard copy after posting items on the electronic mail/bulletin board system operated on SpecialNet to which all participating states had access through subscriptions provided by the project. This information dissemination function (particularly related to unpublished documents, draft reports, etc.) was very well received by all participating states. Over 180 documents were sent to participating states, and 151 requests for substantive information were made by state policy makers.

II. STATE POLICY ISSUES AND TRENDS

A. STATE-LEVEL TECHNOLOGY POLICY -- A RECENT PHENOMENON

Prior to 1980, only seven states had formal policies on the use of electronic technology in education. Today, 47 states have formal policies incorporated in state legislation, official state board policies, and SEA mandates and regulations. This swift change can be attributed to a number of factors. Unwilling to be left out of this local, grass roots movement, a number of states are attempting to catch up with local teachers and administrators to get a handle on the education technology movement. Some SEAs perceive short- and long-term opportunities for building empires around new technology advances, particularly telecommunications. In a larger number of states, SEAs are reacting to pressures, both subtle and explicit, by governors, legislatures, professional associations, organized parent groups, and LEAs. The majority of states, however, now realize that the SEA is the only legal entity with constitutional authority, coordinating power, and financial resources to administer strategies which minimize costly duplication of effort and offer some promise of assuring the availability of quality courseware and knowledgeable teaching staff and administrators.

1. Contextual Variables

On the surface, the planning processes used by states are deceptively similar. Most have formed, or are planning to form, task forces or advisory groups to identify priority issues, to recommend strategies, and to develop implementation plans related to the use of technology. Beneath this veneer, however, the specific strategies for addressing specific issues vary considerably among the states due to a number of contextual variables prevalent within the states. The influence of these variables, however, differs from their relative importance in other areas where implementation models have been applied (e.g., Kirst, Easton, Blaschke). For example, the traditional role of the SEA (centralized versus local autonomy) is among the most important contextual variables in explaining the degree of implementation of a Federal

mandate or law, such as ESEA Title I, P.L. 94-142, etc. Generally speaking, in most states many of the contextual variables influencing planning strategies at the SEA level relating to computer literacy and the use of technology are associated with the grass roots interest and external pressures upon the SEAs "to do something."

In 11 states, the primary force in policy development has been state legislatures (e.g., Minnesota, Florida, and West Virginia). Key legislators not only have drafted comprehensive, cohesive, and innovative legislation, but also have participated actively in implementation of this legislation. In approximately 15 other states where legislatures reappropriate Federal education funds (e.g., ECIA Chapter II), the influence has been less direct but certainly significant. In about ten states, policies can be attributed primarily to governors' offices or other executive agencies within the state.

The source of a policy often determines its content. For example, under the influence of governors who desire to create "high tech centers" and attract "high tech" industry to the state, computer literacy has taken on a distinct definition closely related to programming. In states where the definition and computer literacy curriculum has been defined by "educators", the definition is broader with an emphasis on information age communication and personal survival skills. Legislated mandates within the states are more likely to include provisions related to equity considerations than policies influenced by SEAs and governors' offices. Whereas legislative bodies typically have included provisions for impact or effectiveness evaluations in their technology initiatives, SEA initiatives appear to have emphasized formative or process evaluations.

Another variable influencing policy formulation, is the "stage of development" within the state, an all-encompassing concept which includes the level of computer literacy at all agency levels, the prior use of technology, and the presence of existing technology "infrastructures." This variable, however, is two-edged. On one hand, a task force comprised of representatives from mostly computer-using schools is more likely to develop policy recommendations which are technically sound and cost-effective. On the other

hand, such an "advanced" state is most likely to have previously developed and implemented technology infrastructures in the area of telecommunications, state-wide ITV, on-line data bases and other networks, etc., whose bureaucratic and other support systems are threatened by microcomputers and recent advances in telecommunications (e.g., recently deregulated FM subcarrier for electronic mail and software distribution).

During the political "tug and pull" negotiating process, the "theory of the second best" often prevails. For example, a state data processing agency may require that a microcomputer-based network between the SEA office and all LEAs be tied into an obsolete state agency large mainframe; or, that a state-wide telecommunications system already available through leased telephone lines be used in lieu of other less expensive, more responsive and dependable telecommunications data transmission mechanisms. Inadequate planning for technology obsolescence constrains cost-effective technology applications and creates long-run barriers. Drastic measures, often taken by the legislatures, are sometimes required to allow a new generation of technology to be used within a state replacing obsolete systems. An ideal planning environment exists in a state which has a stable core of computer literate district administrators, teachers, and state officials without an in-place infrastructure which is threatened by recent technology advances. The presence of such a planning environment may explain the significant progress made in the last two to three years in states such as Montana, West Virginia, Tennessee, and North Carolina.

Another important factor is high-level leadership, not only with respect to technology use and computer literacy but also regarding general education reform. State leadership here includes the charismatic ability of key officials to communicate, cajole, and persuade LEA administrators, educators, and education groups; and the political acumen to integrate technology initiatives into appropriate, related, popular reform movements (e.g., the "Computer Skills Next" component of a ten-point plan for general reform in Tennessee) and the integration of technology into state "education excellence" reform movements (e.g., West Virginia and Minnesota).

The traditional role of the SEA in its relations with LEAs in this area is less of a critical influence over the policy formulation and planning process for a very simple reason -- namely, with few exceptions, LEAs have requested stronger state leadership roles in terms of minimal guidelines, mandates, standards, etc. to allow the key LEA officials who are supportive of technology to leverage the local school board and community for additional local resources or reallocate existing resources to computer literacy and related activities. This phenomenon, in conjunction with external political pressures, is providing opportunities for SEAs to usurp prerogatives previously relegated to LEAs or generally take a more concerted leadership role.

2. Planning Considerations Unique to Techology

Effective state-level planning and policy formulation must take into account the grass roots nature of the electronic learning revolution, the unique nature and volatility of the "supply side" (e.g., the private sector) and the rapid advances in and influence of electronic technologies.

a. Grass Roots Movement

In 1981, Quality Education Data reported that over 60 percent of the purchases or purchasing decisions for microcomputers in schools were made by individuals in non-supervisory positions (i.e., individual teachers and/or "computer buffs") relying heavily on personal, PTA, or local school building funds. The number of reported microcomputers used in public schools increased from a base of approximately 20,000 in 1980 to an estimated 630,000 by June 1984 (TALMIS). Ninety-eight percent of all LEAs with 600 or more students have at least one microcomputer (QED, 1984). The implications for state-level policy makers here are significant:

- The talent pool of technical expertise and practical experience resides largely at the local level.
- Teacher resistance to microcomputer use has diminished significantly.

- The extent and type of microcomputer use, particularly effective use, varies considerably among districts within states; state policies must recognize this important variation and must be designed so they do not create problems for some districts while helping others.

In addition, for every microcomputer in public schools, over ten exist in the homes of students. This home-based resource not only has implications for local and state policies, but surfaces relatively new issues:

- Students from computer-using households are likely to place increased demands upon teachers and the school environment/organization (e.g., individualized instruction and pacing).
- Equity concerns will be exacerbated.
- Opportunities for closer school/community/parent relations have been created as technology enters the homes (i.e., schools assisting parents in selecting courseware, telecommunications information services, etc.).
- Opportunities for schisms between community, schools, and parents also increase (i.e, "If you can't or won't provide the necessary computer literacy and skills development for my child, I'll take him out of the schools and educate him at home.").

b. Volatile Industry

The electronic learning industry is distinctly different from the textbook industry. It operates under a different set of incentives, has created radically different commercial patterns, and is ever changing and volatile. Traditional textbook publishers plan a life-cycle of approximately five to seven years for a textbook, pay developers relatively low royalties, and produce in large volume to reduce cost. Electronic learning publishing, on the other hand, is characterized by high royalty payments, courseware life-cycles of two years or less, low production volume and cost, and significantly higher marketing and distribution cost. Additional patterns and characteristics also distinguish the private sector supply side:

- In 1982-83, approximately 80 percent of all courseware produced for institutional education was developed by small to medium-sized development firms and groups, not large, traditional publishers; over time, publishers may increase in-house development activities.

- In 1983, TALMIS reported schools purchased approximately 42 percent of all courseware and 79 percent of all hardware directly from retail software and computer stores; only 13 percent of courseware was purchased through education dealers and audiovisual networks traditionally used by publishers.

- Almost two-thirds of the courseware developers which produced courseware primarily for institutional education two years ago, now develop and/or distribute educational courseware primarily for the home education market due to difficulties in protecting courseware from illegal copying by schools and the ease of direct merchandising to homes.

c. Technology Drives Education

Electronic learning is basically "technology driven", which has implications not only for software producers but also LEAs and state policy making. Courseware producers and publishers base their products on two considerations: (a) the brand of hardware now in schools or expected to be in schools in the near future; and (b) the timing and level of investment necessary to convert courseware to a newer model of an existing hardware brand. The net result is a one-to-three-year lag in an acceptable level of courseware available for new hardware entrants into the education market and/or newer models of existing brands.

Until now, technology also has driven decision making at the LEA and SEA level to a large extent. For example, the hardware brand inventory base in schools affects the range of software evaluation activities at the state level and the potential for SEA-based software distribution through electronic means. In cases where hardware decisions affect software and related decisions at both the state and local levels, planning decisions become heavily dependent upon the hardware manufacturer's plans (e.g., uncertainties regarding obsolescence, continued support and maintenance, etc.). Thus, in addition to becoming a "stepchild" to the home education market, education has also become a "stepchild" to a technology-driven industry. Fortunately, over the horizon,

education's stepchild dependence will decrease due to increased compatibility among hardware (e.g., similar operating systems or low-cost development/conversion processes) and advances in low-cost telecommuncations designed for state-wide use in education.

For state-level policy makers and planners, a number of opportunities do exist at present within this apparent chaotic situation. These include:

- The "monopsony" or "purchasing power" of large states or consortia of smaller states can establish standards and criteria to be used not only for software evaluation, but also for contract courseware development and/or can provide large-scale, limited markets where developers finance the development process.
- Through state-wide courseware distribution systems, SEAs can work directly with small to medium-sized courseware developers, thereby minimizing the "illegal copying" concern of the developers and reducing significantly the courseware distribution cost incurred by publishers.
- SEAs can develop policies which facilitate improved LEA/community/parent relations, particularly in software related areas, and which build upon the strengths and capabilities of LEAs and talent pools at the local level.

B. STATE-LEVEL POLICY ISSUES AND ALTERNATIVES

While the specific strategies undertaken across the country vary significantly among states, most of the states are addressing a number of similar policy issues. These issues and the types of questions and concerns confronting policy makers are summarized below.

1. Software Evaluation and Dissemination

In 35 states, plans are being formulated or implemented in the area of software evaluation and dissemination. Most states have defined, implicitly or explicitly, the purpose of software evaluation. For example, Texas and Arizona are considering establishing courseware evaluation procedures for the purpose of state adoption, similar to that used with testbooks. In Minnesota, the primary purpose is to establish a list of "quality courseware" from which LEAs

can purchase courseware under state discounts and subsidies. Most states, however, view their role as a mechanism for collecting and evaluating courseware to disseminate courseware reviews to LEAs.

The question of who should conduct the evaluations is a critical concern with a myriad of alternatives being planned or pursued. For example, beginning with Kentucky, eight additional states rely heavily upon the Education Products Information Exchange (EPIE)/Consumers Union for most of their courseware evaluation reviews. Over 30 states are members of formal or informal evaluation networks involving the Minnesota Education Computing Consortium (MECC) and MicroSift. North Carolina has an in-house lab operated by SEA staff who have conducted more reviews than any other state in the country. In Maryland, the Department of Education will facilitate courseware review through a network data base where individual LEAs review courseware and submit reviews to the State's on-line data base, which in turn will provide reviews to LEAs upon request. Utah and Kansas have provided grants to institutions, Utah State University, and Project MICC (Microcomputer Information Coordination Center), respectively. The Utah State Project SECTOR will be "turnkeyed" over to the Utah SEA over time and integrated into its Information Technology Consortium of LEAs.

2. Software Distribution and Exchange

During 1983, following their experiences in distributing MECC (Minnesota Educational Computing Consortium) courseware to LEAs, a number of states began to consider an expanded role for the SEA in actual courseware distribution for a number of reasons. First, new advances in telecommunications technology offer cost-effective alternatives to traditional distribution patterns. Second, both developers and state-level officials recognize that 60 to 70 percent of the unit price of courseware can be attributed to marketing and distribution costs and are attempting to work out arrangements which will reduce this cost. The alternative strategies being considered are truly revolutionary. For example, some states with state-wide television systems, such as Iowa, have petitioned the FCC for approval to use a specific channel for this purpose. Maryland and New York are considering pilot testing the use

of the FM subcarrier, recently deregulated, for courseware distribution. Several states, such as Utah, Montana, and West Virginia, are planning to implement on-line computer networks with "software library nodes" for software evaluation and/or distribution accessible to LEAs, students, and/or parents.

3. Computer Literacy

Developing or implementing plans for computer literacy for students became a reality in 1984 in at least 30 states. Major philosophical differences exist about the definition and purposes of computer literacy (e.g., computer programming, information processing, computer awareness.) However, the basic questions states are asking are similar. For example, should computer literacy requirements be integrated into existing or modified curriculum as in most states or should computer literacy labs be established? At what grade levels should literacy be introduced? At the junior high or middle school level, as in most states? And, how should computer literacy relate to computer science programs at the senior high level? Should computer literacy be required or mandated before graduation, as in some states?; Or should guidelines be recommended to LEAs by the SEA, as in most? If a computer literacy program is implemented at all grade levels, what are the minimal competencies at each level? What programming languages are to be taught (e.g., LOGO, BASIC, PASCAL)?

Recently, "computer literacy" is being perceived in a different light by an increasing number of state-level policy makers. First, numerous studies in combination with more user friendly hardware and software eroded the conventional wisdom bandwagon that every student had to learn programming to successfully enter the work force. Second, there has been a dramatic increase in the number of tool applications which can be integrated into existing curricula. For example, in the 1983-84 school year, only one of the ten top-selling categories of educational software -- math sequences -- had specific educational content. Nine of the top ten categories could be classified as tool applications including word processing, spread sheets, etc. And third, state-level policy makers increasingly recognized that the computer is only one component of the emerging information age and that students will

have to be able to use technology effectively, including computers, to survive and compete in the emerging information age.

4. Staff Training

Over 35 states are also developing computer literacy and related staff development policies for teachers and administrators at the local level. Given the critical nature of the need, SEAs must decide the appropriate balance between in-service and pre-service training. The questions states are asking refer to linkages between state departments of education and institutions of higher education. What types of standards should be used for both in-service and/or pre-service? Performance mastery? Paper and pencil? College credit? Who should provide in-service training and how? Trainer of trainers? Reliance on the private sector, including local employers and hardware/software vendors which provide free computer literacy training? And should computer literacy requirements for teachers be mandated, as in Utah? And if so, through teacher certification or through program certification with credits? Or should the SEA recommend guidelines or standards to be followed by LEAs and teacher colleges at their own discretion? Should different types of teachers be required to master different types of computer skills?

5. State-Wide Reporting and Telecommunications

In 1983, approximately half of the states had implemented or were planning a combination of state-wide reporting and telecommunications systems via electronic mail. There is considerable debate, however, over system selection. Some states favor relying upon existing infrastructures which depend mostly on telephone lines; others lean toward emerging technologies such as dedicated satellite-based "gateway" telecommunication systems, etc.

Understandably, telecommunications and state-wide reporting systems are of greater concern west of the Mississippi than elsewhere. While all SEAs subscribe to at least one "gateway" network, approximately ten states had two or more state-wide education telecommunications systems by the end of 1983

including SpecialNet, and/or their own dedicated system for electronic mail (e.g., Pennsylvania and Florida).

6. Equity and Access

The issue of equity and access has surfaced in virtually all states resulting in frustration among state-level policy makers, moreover, the degree to which equity problems actually exist has been widely questioned. Most studies and market research surveys conducted two or three years ago indicated that wealthier schools were much more likely to have microcomputers than poorer schools. Within the last year, however, several studies and surveys conducted by states indicate that, for example, students in Chapter I schools have greater access to microcomputers than do students in non-Chapter I schools. In special education, the projected increase in the use of microcomputers and communication aids and devices is two-to-three times greater than in education generally for 1985-86 (Blaschke, 1984).

Policy makers also argue that the equity problem is being resolved at the local level through a mutually supportive paradoxical situation. On one hand, most empirical research on the effectiveness of computer-assisted instruction (CAI) indicates that it is most effective in a drill and practice mode with students who are behind grade level at the elementary and junior high level. As school districts base decisions on this research, CAI will increasingly become targeted on the student needing remedial education. On the other hand, some policy makers believe that students who have access to computers in the home will increasingly become bored with the quality of courseware relegated to the schools, hence, more and more students without access to microcomputers in the home will have access to them in the schools.

And last, those policy makers who perceive a problem are frustrated with their inability to address the problem at the state level. Only a limited number of states such as Virginia, California, and Georgia among others are attempting to address this problem through state matching grants and equitable distribution of funds through state allocation formulae. Most agree that the problem, in the final analysis, is a local problem.

III. SLATE IMPACT AND CONTRIBUTIONS

A. ASSESSMENT STRATEGIES

SLATE's mission was to assist state policy makers in formulating and assessing state plans and strategies for using electronic technology in educational institutions. The project was not designed to achieve specific, predetermined solutions. This would have been inappropriate in light of the diverse, rapidly changing policy context described previously. It also would have been inappropriate in light of the existing Federal role in education.

Evaluating a project with such a broad objective is inevitably difficult. There are two sets of standards, however, which can be used as benchmarks. One is observable impact of the project on state policy making and policy. The specific contributions of SLATE described below are based primarily upon observable activities and events and discussions with state-level policy makers subsequent to the SLATE workshops and technical assistance activities. It also reflects a consensus judgment of key SLATE project team members and staff consultants which participated actively in the project and maintained communications with participating state officials. The other is the evaluative responses of the participants in SLATE workshops.

In this section of the report we summarize the contributions of SLATE and the major impacts which it had upon policy making related to technology use in the participating states. We wish to reemphasize that the stage of development and the particular context in which policy formulation occurred in each of the states varied, as did many of the priority policy issues and strategies under consideration. Both the customized workshops and follow-up technical assistance reflected these differences among the states. After the discussion of SLATE impact, we will then conclude with a summary of workshop evaluations completed by state policy makers who participated in the workshops.

B. CONTRIBUTIONS AND IMPACT

To identify the specific impact upon state policy making attributed directly to SLATE is no mean task in the context of state-level politics, interstate and intra-state agency turf battles, ever changing technology advances, and relations with the private sector. In Exhibit III-1, we present an overall summary of the direct as well as indirect contributions of the project on a state-by-state basis. SLATE directly assisted state education policy makers in four respects. First, it provided a pretext and forum for dialogue among diverse interests which usually are difficult to formulate and to implement effective state education policy. Second, the project served as a policy catalyst and as a mechanism for initiating or accelerating policy trends already evident. Third, the project provided information as well as facilitated the creation of information sharing networks within states as well as among states. And last, SLATE contributed to specific policy formulation reflected in legislation, SEA or state board policy, and/or initiatives undertaken by the governor's office.

1. Issues Forum

While state education policy making once was pretty much the preserve of the SEA, the name of the game recently has changed radically. Legislators and governors are now major influences in many states. So, too, is a widening array of powerful state-wide educational interest groups representing teachers, school boards, and others.

Closely related, there have been important changes in the dynamics of policy making within state education agencies themselves. Chief State School Officers and their senior deputies have been working with mounting vigor to coordinate state education agencies internally, to make sure that everyone is pulling in basically the same direction.

These changes have placed a mounting premium on dialogue among policy makers. Achieving dialogue, however, is often difficult unless some

SUMMARY OF SLATE CONTRIBUTIONS

IMPACT TYPE	Arizona	Arkansas	Colorado	Delaware	Georgia	Kansas	Louisiana	Maryland	Michigan	Mississippi	Montana	New Hampshire	North Carolina	Oklahoma	Rhode Island	Tennessee	Utah	Virginia	West Virginia	Wyoming
1. Issues Forum																				
a. Info Exchange	+		+	+		+		+		+		+		+	+			+	+	+
b. Issue Clarification		+	+	+			+		+	+							+	+		+
c. Consensus Building		+			+	+	+	+	+		+	+	+				+	+	+	
d. Decision Making					+	+	+	+			+		+			+			+	
2. Catalyst																				
a. Technology Priority			+	+	+		+	+		+		+			+				+	+
b. Planning Strategies	+	+			+		+	+	+		+					+			+	
c. Implementation		+				+					+		+		+	+	+	+		
3. Information																				
a. Network/People		+			+		+	+	+		+	+							+	+
b. Exchange			+			+						+		+	+	+		+		+
c. Decision Making		+		+	+	+	+	+			+					+	+	+		

III -3-

EXHIBIT III-1

independent interest provides a pretext and a neutral ground for the diverse interests to come together.

Clearly, some of the policy makers who participated in SLATE had talked to one another previously. The range and depth of conversation, however, often had been far less than many key players would have liked and SLATE helped fill that gap. In Arkansas, for example, it provided the first real opportunity for members of the university community to discuss with state education agency officials changes that will be necessary in preparing teachers for using electronic technology. In Montana, it provided an opportunity for the SEA and the Governor to link their separate plans for education technology and state economic development. In West Virginia, SLATE provided an important opportunity for a key legislator to clarify legislative intent on an innovative plan for electronic distribution of educational software.

In at least 12 states, SLATE provided a significant contribution in the area of information exchange regarding issues and strategies being addressed in other states. Moreover, it also provided useful information to virtually all participants on recent technology advances offering potential in education and the education policy implications of the emerging information age. In the remaining states, information exchange had occurred through previous projects (Tennessee) or ongoing networks (Michigan Computer User Group). In 90 percent of the states, the presentations on technology trends and implications were reported on workshop evaluations as the most useful information sharing session.

In at least nine states, the SLATE forum served a critical role in clarifying issues. SLATE presenters were viewed as useful in clarifying the following types of issues: (a) computer literacy versus technology education for the information age; (b) equity and access; (c) courseware distribution and exchange; (d) SEA/private sector relationships; and (e) research findings on computer assisted instruction. For example, prior to the workshops, few policy makers viewed the computer as only one facet of the emerging information age. Only a select number of policy makers were aware of the significant differences between the electronic learning publishing industry and the traditional

textbook-school supply industry, particularly the incentives under which each operate. And last, while a limited number of policy makers were aware of the current research findings on computer-assisted instruction, only a very limited number were aware of findings related to computer-managed instruction and the uses of technology as productivity tools for administrators and teachers.

In 12 states, the project, particularly the workshop, assisted in "consensus building" among policy makers. In states which had not formulated goals and had not identified issues, the workshop contributed to consensus building in these areas; in most states, however, the consensus building process focused upon alternative strategies for implementing policy, particularly in the area of software evaluation and dissemination. As a result of the project, policy makers began to consider interstate consortia and subscription services as serious alternatives to SEA-operated courseware evaluation systems. The primary focus of consensus building varied. For example, in West Virginia and Montana, the vast majority of SLATE participants were representative of LEAs, state education associations, universities, legislatures, and state agencies other than the state department of education. Hence, the major objective here was to develop consensus among organizations with different political and vested interests. In states such as North Carolina, Tennessee, and Louisiana, a primary focus was upon consensus building among various divisions within the SEA, particularly regarding planning and implementation strategies.

In approximately eight states, critical decisions were actually made during the SLATE workshop regarding technology policies or implementation strategies. In Louisiana, for example, a legislative proposal, which was subsequently passed by the legislature, was drafted and approved by the SLATE participants. In Montana, the Governor appointed a Commission on Education Technology. During the Kansas SLATE workshop, policy makers decided on state-wide use of a single telecommunications network. In Maryland, policy makers defined a unique role for the Maryland State Department of Education (MSDE); in Georgia, policy makers identified and refined seven specific goals which will influence technology planning and implementation in that State over the next decade.

2. Catalyst

According to virtually all key policy makers within SEAs, SLATE provided a very critical catalytic function during the workshops and thereafter. While it is difficult to determine the exact degree of attribution, this catalytic role covered a wide range of topics and activities.

Participation in Project SLATE on the part of specific states served as a catalyst in certain cases to surface technology planning and policy as a priority issue among decision makers. For example, as a direct result of participation in SLATE, the West Virginia Board of Education placed a high priority on the development of a state-wide plan for technology use. Involvement in SLATE also provided West Virginia staff an opportunity to maintain the momentum in preparing an excellent plan over a short time period. In New Hampshire, SLATE participation prompted the need for state-wide planning which was subsequently reinforced by the Governor's announcement in July 1984 that the State would purchase several thousand microcomputers for use in the schools. In certain states such as Montana, Georgia, and North Carolina, SLATE facilitated joint planning between the SEA and the Office of the Governor.

As a catalyst, SLATE also facilitated in a number of planning and implementation strategies. For example, in Tennessee, the use of total package purchasing at the state level (e.g., hardware/software maintenance support and training) received a major impetus from SLATE workshops and subsequent follow-up assistance. In Michigan, it contributed significantly to a unified consortium arrangement among intermediate districts in developing a state-wide legislative proposal. In Arkansas, the information presented by the SLATE team, which was perceived to be a disinterested objective group, further justified the plans for Project IMPAC and most likely will result in an increased budget request. In states such as Wyoming and Mississippi, the SLATE workshop served as a catalyst for local education agencies to request the SEA to take a stronger leadership role in the area of technology planning and use.

3. Information

Perhaps the most direct and immediate benefit of Project SLATE was providing information (such as shown in Exhibit III-1) and the creation of an information network among key policy makers. In those states which participated in Project BEST, information services provided through SLATE represented a continuation of BEST services to varying degrees. Periodic mailings of draft reports, descriptions of exemplary SEA level policies and planning practices, and "fugitive" and/or unpublished articles were well received by all states; however, the degree to which these documents were useful in solving immediate planning problems is difficult to ascertain. The most direct contribution in this area came from responses to specific information requested by key policy makers. Policy makers in a number of states such as West Virginia, Tennessee, Kansas, Utah, and others requested information about model legislation passed in other states which was relevant to specific issues being debated in their state legislatures. Officials in Georgia, Arkansas, Utah, and Michigan requested information on current research findings on the effectiveness of computer-managed instruction (CMI), CAI, and other technology applications in education, which could be used in developing their plans. Over a two-year period, most states inquired periodically about the status of Federal legislation or technology initiatives undertaken by the U. S. Department of Education. Numerous requests focused upon clarification or additional information about new product announcements and their implications for education, particularly in the area of networking and software compatibility. Last, several states requested very specific information requiring research and information gathering on the part of the project team. For example, the Maryland State Department of Education requested information about potential vendors which could provide an integrated local education utility/telecommunications capability.

C. PARTICIPANTS' PROCESS EVALUATION

At the end of the SLATE workshops, evaluation instruments were administered. The purpose of these evaluations was to provide feedback to TURNKEY staff on areas in which modification or refinement might result in

improved workshop presentations and to assess the quality of workshop planning, preparation, and presentation.

Because the SLATE workshops were custom-designed to meet the individual needs of the participating states, not all workshops addressed the same content areas or contained the same functional elements. For this reason, we have concentrated this evaluation segment on those workshop components which were common to all, or nearly all, evaluated workshops. These areas include:

- the clarity with which workshop purposes and objectives were defined;
- the appropriateness of the level of discussion;
- the clarity and usefulness of the presentation of policy issues and alternative strategies;
- the utility of the technology demonstrations; and
- the degree to which workshops enhanced participants' ability to plan for technology utilization in their states.

For each of these areas, rating scales were designed to obtain numerical ratings of participants' perceptions. In addition, participants were given the opportunity to express, in narrative form, any qualitative comments on individual questions or the workshops in general. In order to ensure complete anonymity of response, participants were asked not to identify themselves on their completed evaluation instruments.

The general responses of workshop participants were extremely positive. In every state, participant ratings were substantially better than average with most in the good/excellent range. There was very little variability across sites or from year to year. Moreover, within given questions, responses displayed great consistency.

In the sections which follow, we present a summary of the responses for each of the key evaluation questions.

1. Purposes and Objectives

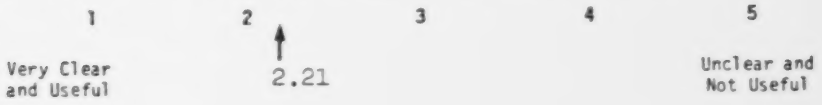
This question, asked at all workshops, revealed that, on the scale of 1 to 5, participants believed that the workshops' purposes and objectives were quite well defined -- a mean average of 2.00. The average ratings were virtually identical for the two SLATE years. The state average ratings ranged from 1.29 to 2.86. These two extremes occurred in Year 1 workshops; the range during Year 2 was substantially narrowed -- from 1.53 to 2.51.

2. Level of Discussion

There was virtually unanimity, as evidenced by the average response of 2.97, that presentations maintained exactly the right levels -- neither too technical nor too general. The average ratings for Years 1 and 2 were 2.90 and 3.01, respectively; the difference is statistically insignificant. Perhaps more surprisingly, the range of respones was extremely narrow -- from 2.70 to 3.14. Because of the broad differences in types of workshop participants from state to state, one might expect difficulty in achieving a proper level of discussion. We were apparently successful in achieving an appropriate balance.

3. Policy Issues/Alternative Strategies

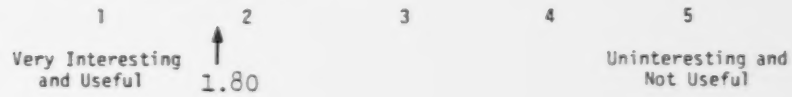
The presentation of policy issues and alternative strategies was:



Most participants felt that the presentation of policy issues and alternative strategies was clearly and usefully presented (this component was not included in three of the workshops). Both the average state ratings and the range of state ratings (i.e., 1.80 to 2.86) were quite stable from year to year. Some qualitative comments from individual participants expressed the wish that we had devoted more time to alternative strategies.

4. Technology Demonstrations

The technology demonstrations were:



The technology demonstrations were extremely well received by participants; most considered them both interesting and useful (i.e., an average state rating of 1.80). The average ratings for the two years were virtually identical (i.e., 1.77 and 1.83) as were the ranges of state average ratings (Year 1 - 1.14 to 2.13; Year 2 - 1.10 to 2.22). A number of participants in early workshops indicated that more time should be available for hands-on experience with demonstration hardware. Subsequent workshops provided such additional time.

5. Planning Capability

The material covered in this workshop will enhance my ability to plan for technology utilization in the State.

The final quantitative question on each evaluation instrument requested the participant's perception of the value of the workshop to his/her technology planning ability. The average state rating of 1.85 indicated a strong feeling by participants that SLATE contributed significantly to technology planning at the state level. For both years, the average ratings were well below 2 and the range of respones was from 1.43 to 2.50. Several participants observed that, although planning capability was enhanced, they were skeptical about the likelihood of effective implementation because of general state political inertia.

6. General Comments

Most of the general comments made by participants on their evaluation forms were extremely complementary of the workshops and the presenters. A few offered criticisms -- often constructive -- of various components of the workshops. In one state, some participants felt that the use of the CONSENSOR was not completely productive; this suggestion influenced later workshops as we limited the CONSENSOR's utilization. In some states, participants felt that an extra day should have been incorporated into the workshops to allow participants to explore issues in more depth.

There were, however, two major themes which emerged from participant comments across nearly all workshops. The first common theme was the need for follow-up technical assistance to: (a) reaffirm the knowledge imparted during the workshops; (b) address in more detail such elements as telecommunications and videodiscs; and (c) assess the level of plan implementation after the passage of time.

The second theme evident in participants comments reflected a certain sense of isolation on the part of SEA officials. They felt a strong need to know what was being done in technology-related areas in other states. They expressed satisfaction that the SLATE workshops presented some such information, but acknowledged that two-day workshops could not provide enough time to address their needs in sufficient detail. Some participants suggested a series of case studies of state implementation strategies in a variety of relevant areas.

In general, we were extremely pleased at the results of the evaluation. Participants' responses confirmed our feelings that the workshops were both interesting and productive for state officials. We were gratified at the preponderance of complimentary remarks made both verbally and on the evaluation forms. We were also pleased that a large portion of the criticisms expressed the desire for more and/or more detailed technical assistance similar to that which we provided under SLATE.

APPENDIX A

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STATE LEADERSHIP ASSISTANCE FOR TECHNOLOGY IN EDUCATION (PROJECT SLATE)

FINAL REPORT

VOLUME II

PREPARED FOR: U. S. DEPARTMENT OF EDUCATION

CONTRACT NO: 300-82-0179

THE CONCLUSIONS AND RECOMMENDATIONS IN THIS REPORT ARE THOSE OF THE CONTRACTOR AND DO NOT NECESSARILY REFLECT THE VIEWS OF THE U. S. DEPARTMENT OF EDUCATION OR ANY OTHER AGENCY OF THE GOVERNMENT.

SEPTEMBER 1984

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Acknowledgements

The State Leadership Assistance for Technology in Education (SLATE) project, conducted between October 1982 and September 1984, assisted over 600 state-level policy makers from 20 states in planning the effective and appropriate use of electronic learning technology. Services provided to policy makers through SLATE included: (a) two-day, custom-designed workshops to facilitate policy formulation and planning; (b) information services on SEA exemplary practices and implementation strategies related to technology use; and (c) follow-up technical assistance and information services to each of the participating states. The project was conducted by Education TURNKEY Systems, Inc., which was awarded the competitive contract from the U.S. Department of Education/Office of Educational Research and Improvement/Center for Libraries and Education Improvement (Educational Technology Branch), with assistance from Dr. William Wilken, Dr. Alan Hofmeister, and The Futures Group, Inc.

The Final Report on SLATE consists of two parts: (a) Volume I, which describes SLATE activities, state-level policy trends, and the impact of SLATE upon policy making; and (b) Volume II, which addresses priority state-level issues and Federal policy options to facilitate effective planning and implementation.

The success of Project SLATE, as reported in Volume I, can be attributed to a number of individuals and groups who contributed significantly to various aspects of the project. The Project Advisory Group, which consisted of high-level officials from firms which develop or market software and state-level policy makers, assisted enormously during the design phase of the project and by disseminating information about SLATE. The Project Advisory Group membership is listed in Appendix A. The SLATE State Coordinators, who assisted in the planning and conduct of SLATE workshops, were very cooperative and extremely useful throughout the project. The names of the participating states and the SLATE State Coordinators from each state are listed in Appendix B. The success of SLATE workshops can be attributed, to a large extent, to the active participation of the 600 state-level policy makers including governors, legislators, SEA officials, state board members, and representatives of education groups. In approximately two-thirds of the SLATE states, actual demonstrations of hardware and software applications were presented to participants, with opportunities for hands-on experience. These opportunities were greatly facilitated through the cooperation of hardware manufacturers, dealers, electronic learning publishers, and software developers who loaned equipment and software to the project for specific demonstrations which were requested by states.

Without a team effort, SLATE could not have achieved its objectives. Dr. William Wilken served as "State Liaison" and presented during most of the SLATE workshop sessions. Mr. Alfred Morin briefed SLATE participants on technology advances offering potential in education and on the implications of technology for schools. Mr. Morin also was responsible for technology demonstrations. Ms. Sharon Goodwin was responsible for workshop logistics, information dissemination, and operated the SLATE bulletin board/electronic mail system on SpecialNet, which provided reduced rates for participating SLATE states throughout the project. Mr. Blair Curry was responsible for preparing several research papers and final reports. The Futures Group, Inc. assisted initially in operating the CONSENSOR system used to refine policy issues during workshops and then prepared a document on telecommunication advances, which was distributed to the states. Throughout the project we received excellent cooperation and support from Ms. Evelyn White, Project Officer, and Dr. Frank Withrow, Director of the Education Technology Branch.

We acknowledge the contributions of the members of the SLATE team, the SLATE State Coordinators and participants, and other groups and individuals involved; to each we express our sincere appreciation for their assistance and cooperation.

Charles L. Blaschke
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Education TURNKEY Systems, Inc.

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POLICY ISSUES AND OPTIONS

A. INTRODUCTION

The State Leadership Assistance for Technology in Education (SLATE) project was designed to assist state-level policy makers plan effective uses of emerging electronic learning technology in education within their respective states. Over 600 policy makers including governors, legislators, state board of education members, state education officials, and other policy makers participated in two-day workshops in 20 states between April 1983 and September 1984. In addition to providing custom-designed workshops focusing upon state-level priority issues and needs, the project team also provided follow-up assistance and information services throughout the two-year project. Education TURNKEY Systems, Inc. (TURNKEY) conducted Project SLATE, which was funded by the U. S. Department of Education/Office of Educational Research and Improvement/Center for Libraries and Education Improvement (Education Technology Branch).

The purpose of this report is to identify priority policy issues which have surfaced or are beginning to surface and discuss alternative Federal policy options to assist states in technology planning over the next few years. The first volume of the Final Report describes Project SLATE, general state-level policy trends, and the impact of SLATE on state policy formulation relating to technology use. We describe below the major policy issues which were identified during the conduct of SLATE, initiatives undertaken by states, and alternative Federal policy options and strategies, which if implemented, would appear to facilitate effective planning and use of technology at the state level.

B. INFORMATION NEEDS OF STATE POLICY MAKERS

Indicative of a very high priority need of state policy makers, the information exchange services provided by or facilitated through SLATE were well received by participating states. In addition to providing information

during the SLATE workshops, three general types of information services were provided. First, based on perceived needs, the SLATE project team identified and sent copies of over 180 documents, reports, articles, and unpublished manuscripts relating to technology planning and use at the state level to participating states. In addition, several documents on specific policy issues (e.g., telecommunications, software evaluation, staff development) were prepared and distributed by the SLATE team to participating states. Second, the project facilitated the creation of an informal network of primarily SEA policy makers who exchanged information among themselves throughout the project. In this respect, SLATE continued the information exchange in several states previously initiated under Project BEST (Basic Education Skills through Technology). (Also funded by the U. S. Department of Education, Project BEST was designed to facilitate information exchange among states regarding technology use in basic skills programs.) And third, SLATE responded to over 150 requests for substantive information from state policy makers, usually the SLATE State Coordinator, as a follow-up to SLATE workshops. The specific information needs identified below are based largely upon an analysis of the above information requests and trends which have surfaced.

The types of information which state policy makers requested could be categorized as follows:

- telecommunication systems, particularly cost and benefits of emerging alternatives, a need which has increased greatly over the last year;
- staff development strategies, particularly regarding certification and performance-based testing, a need which also has increased over the last year;
- software evaluation and dissemination strategies, a need which has remained high but constant over the last two years;
- model legislation, particularly those legislative packages which were relatively comprehensive, a need which has increased dramatically over the last year;
- research findings on the effectiveness of computer-assisted instruction (CAI) and computer-managed instruction (CMI), a need which is quickly emerging as a high priority issue in over 25 states;

- software exchange and distribution at the state level, a need which has increased dramatically during the last year; and

- specific information on recently announced technology advances, particularly in the area of telecommunications, networking, and tool applications, a need which reflects a healthy skepticism of commercial advertising and a need for some type of verification.

Information needs which have been relegated a low priority over the last year include: (a) policy-related information on computer literacy; (b) information about electronic mail/bulletin board systems; and (c) general information about microcomputer applications in education.

In a number of areas, the information needs of state policy makers have been met, to some degree, as a result of the information exchange networks created and facilitated by Projects BEST and SLATE; some will also be met through the information exchange system operated by the Council of Chief State School Officers (CCSSO). It would appear that information related to software evaluation and dissemination could be handled through the planned service by the CCSSO to compile and distribute descriptions of evaluation procedures used in various states. Similarly, compilations and distribution of draft plans and policies, model legislation, and exemplary practices will also be facilitated, to some extent, through the CCSSO network exchange. Most of the above information will, however, be self-reported by the states with possible attendant biases. On the other hand, there appear to be information needs useful to state-level policy makers which will most likely not be met through the information exchanges described above. The specific information needs here include:

- comparative analysis of technology configurations for specific functions useful for decision making (e.g., telecommunication networks);

- accurate and reliable information on new technology advances which have implications for state-level policy making and planning (e.g., videodiscs);

- research and evaluation findings on the use of alternative electronic learning technologies (e.g., the effects and effectiveness of CAI in compensatory education); and

- trends, projections, and analyses related to "futuring" (e.g., use of expert systems in diagnostic/prescriptive CMI systems).

Because of the economies of scale and aggregation of resources, it would appear that the U. S. Department of Education could provide a very useful information gathering and dissemination function in these specific areas, either through new projects and/or through the expansion of other projects, such as the CCSSO's National Technology Leadership Project.

C. COURSEWARE DEVELOPMENT

Few state-level policy makers are pleased with the current availability of commercial courseware; yet, few states have initiated courseware development activities either through grants to local education agencies or contracts with courseware developers. On the other hand, states which have initiated courseware evaluation activities are increasingly considering using their evaluation criteria in a proactive manner. Here developers would develop courseware to meet criteria and specifications; yet, with the exception of two or three large states which have taken this approach, no other single state represents a large enough limited market as an incentive for developers to privately invest in courseware development to meet an individual state's specifications. A rather obvious alternative, conceptually, is the creation of interstate consortia which can offer a large enough limited market incentive for private developers. While a number of informed interstate consortia in the area of courseware evaluation and dissemination are beginning to crystallize, few consortia have been created with the purpose of developing courseware. In addition to political barriers, there also exist financial barriers. Few, if any, state boards of education are willing to allocate funds from activities serving state's specific needs to the creation of a consortium which will benefit other states.

In order to remedy this situation, one possible alternative would be the funding of interstate consortia specifically for courseware development. These Federal funds would be used solely for the purposes of creating administrative

mechanisms for the consortia and not for development per se; the development funds would be contributed by each state in the consortium. There appear to be two general areas where this arrangement could be justified. The lack of quality courseware in thin market areas, such as bilingual education, vocational education, and to a lesser extent special education, clearly demonstrates that the financial incentives for privately-funded courseware development and marketing in these areas is nonexistent or is minimal. On the other hand, a need could be justified in areas where the quality of courseware is relatively low or, at the least, the courseware does not make maximum use of the capabilities of advanced hardware. Hence, with a saturated market and increasing competition through product differentiation and reduced pricing, there exists, once again, few financial incentives for private developers to invest large critical mass funds for developing new quality packages, particularly of a tutorial and simulation nature. With the recent passage of the "Education for Economic Security Act", P.L. 98-377, a politically feasible "target of opportunity" might exist for funding several interstate consortia related to courseware development in the math and science area. By funding only the set-up and administrative aspects of interstate consortia, adverse political reactions to "the creation of a national curriculum" would be minimized. Moreover, at the state level, similar political arguments against both state-mandated curriculum will also be minimized through the use of a multi-state consortia arrangement.

D. PRIVATE SECTOR COLLABORATION

Throughout SLATE it became increasingly clear that the hardware and software products available for use in schools are driven by technology produced for the business and home education markets. As a result, education institutions for the most part have become a "stepchild" in the process. While there exist a number of reasons for this phenomenon, including alleged illegal copying by schools and costly marketing and distribution for the school market, a major contributing factor has been the lack of in-depth, market-related information and effective communication of this information to private sector developers, distributors, and marketing groups.

Cognizant of this need, the U. S. Department of Education has undertaken several initiatives; however, they have been inadequate. For example, while the NCES "Fast Response Survey" of microcomputer use was helpful, when results were made available it was generally out-of-date and had methodological flaws (e.g., collecting information from central office respondents who were unaware of the actual number of microcomputers in use in the schools). The Secretary has convened at least two meetings with representatives of the electronic publishing industry to address courseware problems; however, few private developers, which develop the vast majority of educational courseware which is distributed by publishers, were in attendance. The National Institute of Education (NIE) funded The Johns Hopkins University Center for the Social Organization of Schools to conduct a survey of computer use at the classroom level in 1982. However, the survey data collected during school year 1982-83 were not finally reported until August 1984. NIE also published a catalog of "computer education projects", sponsored by the U. S. Department of Education; however, while it was a good beginning, the catalog was incomplete and omitted several important projects. The need for timely, accurate, and reliable information upon which the private sector can make product development and marketing decisions to meet educator's current and projected needs is a necessary condition for heavy reliance on the market mechanism to work effectively.

The U. S. Department of Education should seriously consider creating and maintaining a data base on current and projected use of electronic learning technology in the schools, priority courseware needs, and related information which can be used by product developers, publishers, and marketing and distribution groups. Data collection should focus upon district, school, and classroom use in a representative sample of school districts across the country. The data base should be updated continually and should be available on-line for use by the commercial sector on a subscription basis for several reasons. First, the decision-making cycles among producers, manufacturers, and marketing groups vary, each requiring the timely availability of information which is difficult to achieve through periodic reports and is often out of date as a result of the various clearance and other processes within the U. S. Department of Education. Second, most private firms have their own

capabilities for accessing and analyzing the data base. Third, government-sponsored studies of market-related information are often neither appropriate nor relevant for the private sector (or sensitive information is often camouflaged by levels of aggregation which are too high) for market decision-making purposes. And last, on-line dissemination of market-related information will be, in the very near future, more cost-effective than hard copy distribution.

The U. S. Department of Education should also expand its initiatives to provide effective communication and dialogue with the private sector involved in electronic learning technology. The format for dialogue must take into account the fact that several sectors exist which operate under different incentives and have different vested interests. These include: (a) software and courseware developers and development houses; (b) electronic learning publishing firms; (c) marketing and distribution groups, including telecomunication groups which offer opportunities for electronic distribution of courseware; and (d) support groups, including market research firms, trade associations, etc. One possible form of communication could be a national conference where the various groups within the private sector could respond to identified needs in the data base. The proposed conference could be similar to Project ARISTOTLE, which was sponsored jointly by the Department of Defense and the U. S. Office of Education in the mid-1960s. ARISTOTLE was extremely successful in providing the private sector an "advance planning briefing" on technology-related product needs for education and training. Several trade associations, as well as societies such as the Society for Applied Learning Technology (SALT), would most likely join in sponsoring such a conference.

A second alternative would be to hold relatively small group forums periodically with representatives of the four electronic learning technology sectors noted above. The purpose of these forums would be to ensure effective communication and dialogue between the Department and representatives of the private sector and to exchange information on problems, trends, technology advances, and other agenda items of interest to each of the respective groups.

E. TECHNICAL ASSISTANCE TO STATE LEGISLATORS

Advocates of increased computer use in the schools thus far have had only limited success in winning strong endorsement of their objectives from state legislatures. Despite the publicity surrounding computer use in the schools, only 15 legislatures have appropriated significant line item funds for this purpose. Moreover, even where funds are available, state funds for computer purchases are relatively limited. One might argue that this should not be read as a lack of legislative interest; rather, it merely reflects the reluctance of state lawmakers to establish categorical funding programs of any kind. Our experience, however, suggests otherwise.

First, few state legislators perceive any substantial political benefit from committing themselves to expanded technology use in the schools. Most state-level educational interest groups have not made increased funding for technology use a high priority relative to teacher's pay, property tax relief, and other priorities. Second, expertise on education technology within state legislatures is limited. Few legislators are willing to take major steps on any issue until they develop their own in-house "experts" on both substantive committees and at the general leadership level. Third, state legislators have seen so many educational innovations come and go that many genuinely believe that computers are just another fad. Indeed, each time they hear another story about computers being stored in closets, the harder it is to argue against the "fad hypothesis."

Under these circumstances, we believe that the U. S. Department of Education should attach a high priority to developing an outreach assistance program on education technology aimed directly at state legislatures. The activities of this program might include: (a) opportunities for key legislative leaders to make site visits to schools which are using computer technology to effectively address key educational problems in an exemplary manner; (b) matching grants to encourage research by legislative staff on new education technology initiatives; (c) technical assistance for legislative staff in developing new state funding policies on technology planning and use; and (d) research and evaluation on the impact of technology initiatives which already have been enacted or funded.

APPENDIX A

PROJECT ADVISORY GROUP
MEMBERSHIP

PROJECT SLATE ADVISORY GROUP

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Vice President of Research
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UMC 14
Logan, Utah 85322

Ms. Kathleen M. Hurley
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New York, New York 10016

Ms. Kathryn Kleibacker
R. R. Bowker Company
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New York, New York 10017

Ms. Jennelle V. Leonard
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Alexandria, Virginia 22302

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Vice President, Business Development
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Mr. Bodie Marx
President
Mindscape
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Glenview, Illinois 60025

Mr. William Pierce
Executive Director
Council of Chief State School Officers
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Washington, D. C. 20001

Dr. George Smith
Superintendent of Schools
Mesa Public Schools
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Mesa, Arizona 85203

Mr. John O. Whitney
President
Educational Development Corporation
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Tulsa, Oklahoma 74145

APPENDIX B

PARTICIPATING STATES
AND STATE COORDINATORS

PROJECT SLATE STATE COORDINATORS

Dr. Jim Hartgraves
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Division of Instructional Services
Arkansas Department of Education
Arch Ford Education Building
Little Rock, Arkansas 72201

Mr. Dean C. Hirt, Executive Director
Administrative Support and
Technical Services Unit
Colorado Department of Education
303 West Colfax Avenue
Denver, Colorado 80203

Mr. Sid Collison
Delaware Department of Education
Dover, Delaware 19901

Dr. Steve Presto
Office of State Superintendent
Georgia Department of Education
Two Towers East
Atlanta, Georgia 30334

Ms. June Level
Kansas Department of Education
120 East Tenth Street
Topeka, Kansas 66612

Mr. Ray Reech
Executive Director, Academic Programs
Louisiana Department of Education
Post Office Box 44064
Baton Rouge, Louisiana 70804

Mr. Michael Sullivan
Division of Instructional Television
Maryland Center for Public Broadcasting
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Owings Mills, Maryland 21117

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Lansing, Michigan 48902

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Office of Public Instruction
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State Capitol
Helena, Montana 59601

Mr. Frank Brown
New Hampshire Department of Education
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Concord, New Hampshire 03301

Ms. Elsie Bromback
Assistant State Superintendent
North Carolina Department
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Director, Computer Skills Next
Tennessee Department of Education
100 Cordell Hull Building
Nashville, Tennessee 37219

Dr. Robert Ives
Utah Department of Education
250 South 500 South
Salt Lake City, Utah 84111

Dr. M. Kenneth Magill
Director, Division of Instructional
Media and Technology
Virginia Department of Education
Post Office Box 6Q, Monroe Building
Richmond, Virginia 23216

Mr. Nick Hobar
West Virginia Department of Education
1900 Washington Street
Charleston, West Virginia 25305

Dr. Audrey Cautherman
Wyoming Department of Education
Hathaway Building
Cheyenne, Wyoming 82002

APPENDIX C

LETTERS OF APPRECIATION

COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION
P.O. Box 60
RICHMOND 23216

July 9, 1984

Mr. Charles Blaschke, Project Director
Education Turnkey Institute
256 North Washington Street
Falls Church, VA 22046

Dear Mr. Blaschke:

I am delighted to learn that you are considering the possibility of developing a proposal to continue certain aspects of the SLATE project. As one of the original participating states, we feel that we have benefitted from our participation and have been most appreciative of the many materials and resources sent to us by Education Turnkey.

I perceive each of the four areas including: (1) continuation of monitoring technology advances which offer potential, particularly on a state-wide basis, for improving the quality of education; (2) continuation of identifying and reporting on exemplary state-level planning and implementation practices and model legislation related to education technology use; (3) compiling and synthesizing relevant findings from appropriate Federal and state evaluation studies regarding planning and use of technology; and (4) disseminating information through both electronic mail and hard copy to states wishing to participate in the project to be of equal value.

I hope that you decide to develop the application and I also hope that it is funded. I offer via this correspondence, my support and endorsement.

Sincerely,

M. Kenneth Magill psw

M. Kenneth Magill, Director
Division of Instuctional Media
and Technology

MKM/psw

cde Colorado Department of Education

First Western Plaza
303 West Colfax Avenue
Denver, CO 80204

Calvin M. Frazier
Commissioner of Education

July 11, 1984

Charles Blaschke
Project Director
Project SLATE
Education TURNKEY Institute
256 N. Washington Street
Falls Church, Virginia 22046

Dear Mr. Blaschke:

I am writing to support Education TURNKEY Institute, and specifically Project SLATE, to submit a continuing proposal regarding the development and monitoring of technology in education. We find the need at this time to be extremely critical for groups such as Project SLATE to provide assistance to all states in a consortium of sharing and cooperating in the study and evaluation of alternatives. At this point we do not know the potential which the new technology can bring to improving education. We are only beginning to understand how the development and improvement of quality in education can utilize technology.

Through the identifying and reporting of exemplary state level practices and of legislation which may implement these practices, we can do much to improve the lot for all of us. As this new technology develops, we must have a way to become aware and to disseminate information across this country, and specifically get it to the individual school districts within each of our states. We strongly support the efforts of Project SLATE, and feel that it has been helpful in establishing some policy guidelines in Colorado, as well as in sharing individual success stories in our local school districts.

We need to continue many of the services which we have just begun. We strongly support this effort and wish you success in development of this proposal. If we can be of any further assistance, please feel free to call upon me. Your efforts have been excellent so far, and we want to continue to build upon that foundation.

Sincerely,

Edwin E. Steinbrecher
Deputy Commissioner

EES/bb

COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION
P.O. Box 6Q
RICHMOND 23216

January 18, 1983

Mr. Charles Blaschke
Education Turnkey Systems
256 W. Washington Street
Falls Church, VA 22046

Dear Mr. Blaschke:

Thank you for sharing your concerns and suggestions regarding the use of microcomputers in education with the Microcomputer Task Force. Your presentation was most helpful to these key instructional leaders in their decision making process. We believe that the guidelines resulting from this meeting will help educators across the Commonwealth better prepare students to function in our technological society.

Again, we appreciate your time and effort. For your information, enclosed are copies of the other presentations received.

Sincerely,

Carl L. Riehm
Associate Superintendent for
Curriculum and Instruction

CLR/rmp
Enclosure

STATE OF MICHIGAN

DEPARTMENT OF EDUCATION

Lansing, Michigan 48909

PHILLIP E. RUNKEL
Superintendent
of Public Instruction

STATE BOARD OF EDUCATION
DR. GUMECINDO SALAS
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NASBE Delegate
BARBARA DUMOUCHELLE
BARBARA ROBERTS MASON
NORMAN OTTO STOCKMEYER, SR.
GOV. JAMES J. BLANCHARD
Ex-Officio

November 30, 1983

Mr. Charles Blaschke
President
Education TURNKEY Systems, Inc.
256 North Washington Street
Falls Church, Virginia 22046-4549

Dear Mr. Blaschke:

I wanted to let you know that the SLATE workshop that you conducted on November 14 and 15 in Michigan was extremely well received and I have heard a number of positive comments.

Senator William Sederburg indicated to me that he was quite impressed with it and felt his time was well spent. Dr. James Phelps said he was especially pleased with the results and hopes we might arrange a follow-up session at some point.

On behalf of the Department of Education, I want to thank you for all the planning and effort that went into this workshop. I know the participants benefitted greatly.

Sincerely,

Phillip E. Runkel

PER:ds

State of West Virginia
Department of Education
Charleston
25305

ROY TRUBY
STATE SUPERINTENDENT
OF SCHOOLS

20 December 1983

Dr. Charles Blaschke
Education TURNKEY Systems, Inc.
256 North Washington Street
Falls Church, VA 22046

Dear Dr. Blaschke:

I wish to commend you and the contributions of Project SLATE staff to the final report of the West Virginia Task Force on Technology in Education. The final report is well written, based on timely and relevant data, and provides a meaningful structure for planning and decision making related to technology in education. I was impressed with the shared vision and consensus achieved by the wide range of constituents represented on the Task Force. Based upon the consensus achieved on the final report, it seems to me that this effort has been a productive and rewarding experience for you, Bill Wilken, and Alfred Morin.

At this time, Department of Education staff are reviewing the final report for its policy and program development implications. We have discussed the final report with the State Board of Education and received positive reactions. Moreover, the final report will be distributed to educational leaders throughout West Virginia and the nation to share the recommendations and to solicit comments.

I should like to thank you very much for the time and effort directed by Project SLATE toward my charge. The result is a significant and relevant document for guiding educational growth concerning technology in education.

Sincerely,

Roy Truby

Roy Truby
State Superintendent of Schools

RT:kjs/1092L

State of West Virginia
Department of Education
Charleston
25305

ROY TRUBY
STATE SUPERINTENDENT
OF SCHOOLS

24 August 1983

Mr. William Wilken
Project SLATE
256 North Washington Street
Falls Church, VA 22046

Dear Bill,

I wish to thank you very much for attending our second meeting of the West Virginia Task Force on Technology in Education. After you left in the afternoon, several constructive references were made to your final comments regarding training. The Task Force members felt that you had made significant points for them to consider.

We really appreciate the work that SLATE has done in our first two meetings and in distributing information to us. Please know that we will keep you informed of activities that occur between our major meetings.

We look forward to working with you again in the next meeting of the Task Force on Technology in Education. Please note that the steering committee identified Tuesday, 27 September 1983 for the next meeting of the Task Force in Charleston. In the meantime, if you have any questions, please do not hesitate to contact me.

Sincerely,

Nick

Nicholas Hobar, Assistant Bureau Chief
Policy and Organization Development

NH:kjs 1353J

c: Charles Blaschke
Lowell Johnson

COMMONWEALTH of VIRGINIA

DEPARTMENT OF EDUCATION
P.O. Box 6Q
RICHMOND 23216

October 25, 1983

Mr. Charles L. Blaschke, President
Education TURNKEY Systems, Inc.
256 North Washington Street
Falls Church, VA 22046-4549

Dear Charles:

Thank you for arranging the October 19 workshop on software evaluation issues for our Department of Education advisory committee on instructional computing. We enjoyed your presentation as well as Dr. Alan M. Hofmeister's relevant comments. I am enclosing a list of workshop participants.

I appreciate your making it possible for Alan Morin to make a presentation on microcomputer hardware issues at our December 6 & 7 meeting of instructional computing contact persons from Virginia school divisions. Al will make his presentation on December 7 from 10:45 a.m. to 12:00 noon. I will send you a workshop program when available.

Thank you for your continuing assistance. I look forward to future Project SLATE activities.

Sincerely,

Gordon F. Creasy, Associate Director
Instructional Media and Technology

GFC/psw
Enclosure

Georgia Department of Education
Office of the State Superintendent of Schools
Twin Towers East
Atlanta, Georgia 30334

Charles McDaniel
State Superintendent of Schools

July 12, 1984

Dr. Charles Blaschke
Education TURNKEY Institute
256 North Washington Street
Falls Church, Virginia 22046

Dear Charles:

We are very pleased here at the Georgia Department of Education to learn that TURNKEY is proposing to continue your most useful services. On behalf of the staff involved in our educational technology program, I would like to officially commend you and the TURNKEY staff for the work you have done for and with my staff, the Georgia Advisory Council for Educational Technology and with me. You have saved us many hours of labor and provided us good ideas we would surely have missed otherwise.

For your proposal, we use all the services of SLATE but are particularly interested in the following which we have found to be most useful.

1. Continue monitoring technology advances which offer potential, particularly on a state-wide basis, for improving the quality of education.

2. Continue identifying and reporting on exemplary state-level planning and implementation practices and model legislation related to education technology use.

3. Disseminate information through both electronic mail and hard copy to states wishing to participate in the project.

Again, we support your submission of such a proposal to continue these services.

Sincerely,

Charles McDaniel
State Superintendent of Schools

CM:pa

TENNESSEE
STATE DEPARTMENT OF EDUCATION
OFFICE OF COMMISSIONER
NASHVILLE 37219

July 12, 1984

Mr. Charles Blaschke
Project Director
Education TURNKEY Institute
256 North Washington Street
Falls Church, Virginia 22046

Dear Charles:

The Tennessee State Department of Education has appreciated the support it has received from the Education TURNKEY Institute. During our first year of participation, the services from the institute assisted the Department of Education in defining the structure of our COMPUTER SKILLS NEXT program. This nine million dollar program was funded for 1984-85 and is being implemented in all seventh and eighth grades in our state.

In addition, the constant information which the Institute makes available to us in the area of technology allows our staff to keep abreast of recent developments. Your selection and summarization of relevant information is excellent.

The Tennessee State Department of Education wishes to continue its involvement in your project and endorses the continued funding of your activities.

Sincerely,

Carol Furtwengler

Carol Furtwengler
Assistant Commissioner
Career Ladder Program

CF:mnj

maryland itv

MARYLAND INSTRUCTIONAL TELEVISION
MARYLAND STATE DEPARTMENT OF EDUCATION

11767 BONITA AVENUE
OWINGS MILLS, MARYLAND 21117
301/356-5600

July 12, 1984

Mr. Charles Blaschke
Education Turnkey Institute
256 North Washington Street
Falls Church, VA 22046

Dear Charles,

I am very pleased to learn that you are proposing to continue with Project SLATE activities. In Maryland we have been extremely pleased with the information services and personal assistance which have characterized Project SLATE.

It would be difficult to identify a portion of the Project SLATE service which I would like to do without. I know you may be forced to make some decisions so I would recommend that you focus on state-level planning and implementation practices. This information has been particularly helpful to us.

I certainly hope that you will be able to continue to help us and all those involved in educational technology.

Sincerely,

Michael F. Sullivan
Assistant State Superintendent
in Instructional Television

MFS/def

ARKANSAS COMMISSION ON
COMPUTER INSTRUCTION
Don R. Roberts, Chairman
J. Barry Ballard
Timothy Carter
Jerry Lunnstaedter
Mack McLarty
Annie Riggan
Walter Smiley

LEGISLATIVE REPRESENTATIVES
Rep. Carolyn Pollan
Sen. Stanley Russ
Staff
Cecil McDermott, Project Director
John Fortenberry, Consultant

MEMORANDUM

To: Charles Blaschke, Project Director
Education Turnkey Institute
256 North Washington Street
Falls Church, Virginia 22046

From: Cecil McDermott, Project Director CMO
Instructional Microcomputer Project
Arkansas Department of Education
Little Rock, AR 72032

I would like to express my appreciation for the assistance provided by SLATE to the Arkansas Department of Education during 1983-84. The following activities were especially useful to me and my staff in providing leadership for our $2,500,000 experimental program which is involving 22 school districts and 107 classroom teachers.

1. Consultant services were provided by SLATE to evaluate the plan set forth for approval by the Arkansas Commission on Microcomputer Instruction.

2. A jointly sponsored two day conference by SLATE and the Arkansas Department of Education led to the establishment of a three level inservice training program for teachers involved in microcomputer instruction. A teleconference with Alan Hofmeister, Utah State University, was arranged by SLATE and was especially helpful. Discussions on state policies related to educational technology and trends developing in other states were conducted in a meaningful manner.

3. Al Morin assisted in a conference for leaders from government, education and business interested in the progress of the work of the Arkansas Commission on Microcomputer Instruction. His presentation on technological applications to education provided the highlight of the conference.

It is imperative that State Departments of Education have assistance from organizations like SLATE to help us work at the policy level. SLATE is tracking the development of cost effective and educationally sound programs in most states and sharing that information with us. Thank you for this assistance. We look forward to continuing to work with you and your staff.

Oklahoma State Department of Education

2500 North Lincoln Boulevard • Oklahoma City, Oklahoma 73105-4599

JOHN M. FOLKS
Superintendent

LLOYD GRAHAM
Deputy Superintendent

July 17, 1984

Mr. Charles Blaschke
Education TURNKEY Institute
256 N. Washington Street
Falls Church, Virginia 22046

Dear Mr. Blaschke:

The amount of information and research on technology and its use in educational settings is growing daily. There is an important need for State Education Agencies to continue to be informed on new developments in the area of educational technology. Monitoring, coordinating and disseminating such information to participating states is a service which the Education TURNKEY Institute, through Project SLATE, can provide. State-wide workshops is another area in which Oklahoma educators have benefited from the services of Project SLATE.

A proposal to continue these services to state education leaders will in turn help local school districts effectively implement technology into the curriculum.

Best wishes.

Sincerely,

Susan Gay

Susan Gay
Computer Consultant

bsd

ROBERT L. BRUNELLE
COMMISSIONER
Tel. 271-3144

STATE OF NEW HAMPSHIRE
DEPARTMENT OF EDUCATION
STATE OFFICE PARK SOUTH
101 PLEASANT STREET
CONCORD 03301

NEAL D. ANDREW, JR.
DEPUTY COMMISSIONER
Tel. 271-3145

July 13, 1984

Mr. Charles Blaschke
Project Director
Education Turnkey Institute
256 North Washington Street
Falls Church, VA 22046

Dear Mr. Blaschke:

As seems to be the case in a number of states, we find ourselves attempting to make better use of technology in improving the quality of education. The resource provided by Project Slate in planning and carrying out the May workshop was extremely valuable. I think the information and presentation you were able to provide were extremely helpful in identifying issues within our group of teachers, administrators, legislators, and state department staff. All the signs seem to indicate that policies relating to equipment acquisition, software review, and staff training will continue to occupy our attention and efforts during this coming year. The steady flow of technological information the Project Slate workshop and the planning assistance Education Turnkey has been able to provide us meets a timely need for planning in our Department.

I wish to indicate our unqualified support for continued support and technical assistance from Education Turnkey.

Sincerely,

Robert L. Brunelle

Robert L. Brunelle, Ed.D.
Commissioner of Education

RLB:mg

maryland itv

MARYLAND INSTRUCTIONAL TELEVISION
MARYLAND STATE DEPARTMENT OF EDUCATION

11767 BONITA AVENUE
OWINGS MILLS, MARYLAND 21117
301/356-5600

October 24, 1983

Mr. Charles Blaschke
Project Director
Education Turnkey Systems Inc.
256 North Washington St.
Falls Church VA 22046

Dear Charlie:

Thank you for your efforts and fine performance at our Project SLATE Workshop. You'll be pleased to know that the telephone calls haven't stopped and you may have precipitated some decision making about the role of the Department in the area of technology.

We were rather embarrassed at our inability to reach any consensus on the issues which we identified as being crucial, but you handled it very well and took us a long way towards realizing our problem and educating us. By our standards, at least the time was well spent. In addition, I know of at least two other Divisions who are considering requests for assistance.

Thanks for all your help and please keep in touch. There is more to come.

Sincerely,

Michael F. Sullivan
Assistant State Superintendent
in Instructional Television

MFS/def